



# OVERVIEW OF NON-COMMUNICABLE DISEASE

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(December, 2016)

# Objectives of the session



- By the end of the session the students should be able to define and understand :
  - The epidemiology of non-communicable diseases
  - Risk factors for non-communicable diseases
  - Overall framework and common preventive strategies against non-communicable diseases



**Did you know?**

**35 000 000**  
**people died from**  
**chronic diseases**  
**in 2005**

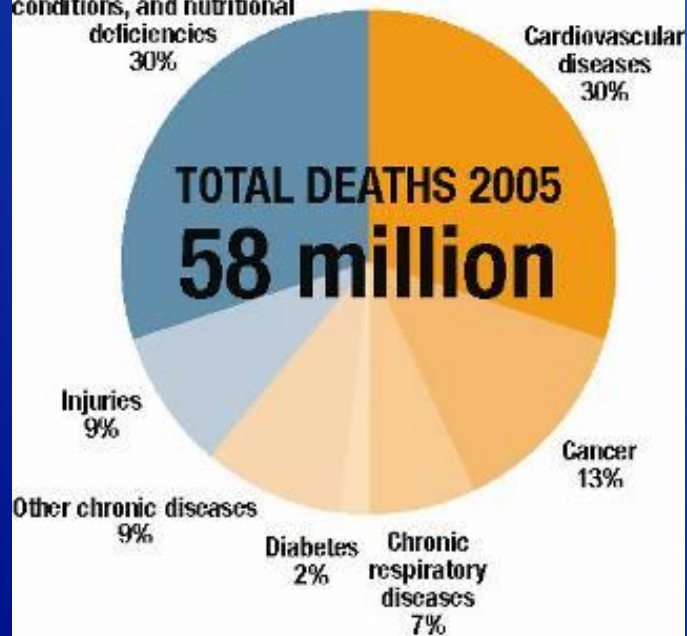
**60%** of all deaths are due  
to chronic diseases

# Non communicable diseases



## Projected main causes of death, worldwide, all ages, 2005

Communicable diseases, maternal and perinatal conditions, and nutritional deficiencies  
30%



- Cardiovascular disease, mainly heart disease, stroke
- Cancer
- Chronic respiratory diseases
- Diabetes

# Definition



- Non-communicable diseases are all impairments or deviations from the normal, which have one or more of the following characteristics;
  - Are permanent
  - Leave residual disability
  - Caused by non-reversible pathological alterations
  - Require special training of the patient for rehabilitation
  - May be expected to require a long term supervision

# Causes of Non-communicable diseases



## UNDERLYING SOCIOECONOMIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS

Globalization

Urbanization

Population ageing

## COMMON MODIFIABLE RISK FACTORS

Unhealthy diet

Physical inactivity

Tobacco use

## NON-MODIFIABLE RISK FACTORS

Age

Heredity

## INTERMEDIATE RISK FACTORS

Raised blood pressure

Raised blood glucose

Abnormal blood lipids

Overweight/obesity

## MAIN CHRONIC DISEASES

Heart disease

Stroke

Cancer

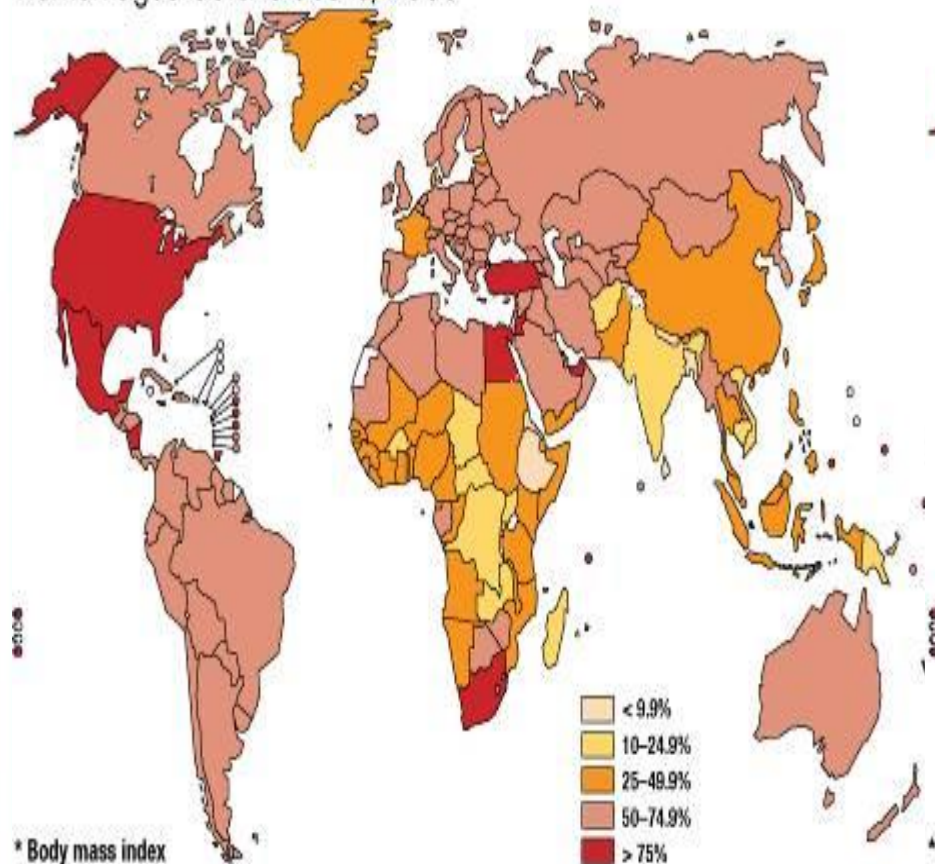
Chronic respiratory diseases

Diabetes

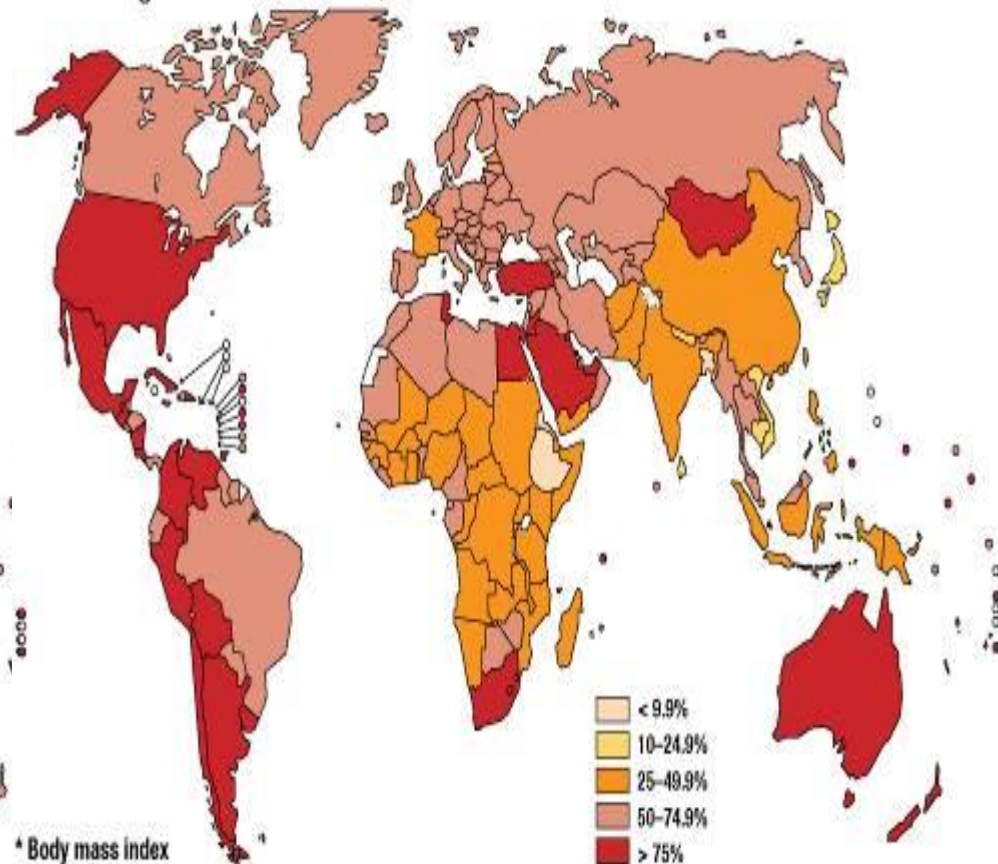
# Risks are increasing



Projected prevalence of overweight (BMI\*  $\geq 25$  kg/m<sup>2</sup>), women aged 30 and above, 2005



Projected prevalence of overweight (BMI\*  $\geq 25$  kg/m<sup>2</sup>), women aged 30 and above, 2015

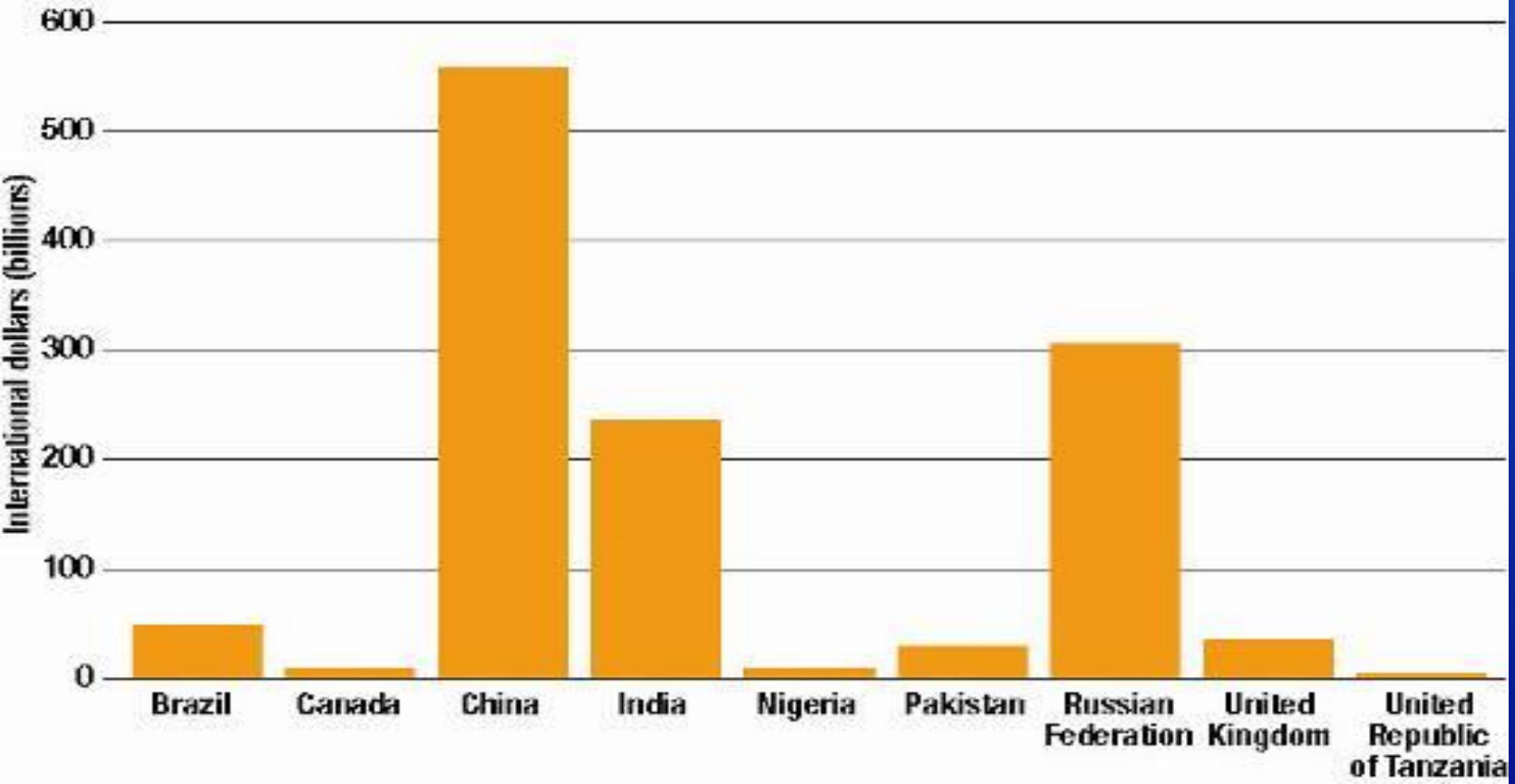


# The economic impact: billions



## Projected foregone national income

due to heart disease, stroke and diabetes  
in selected countries, 2005–2015



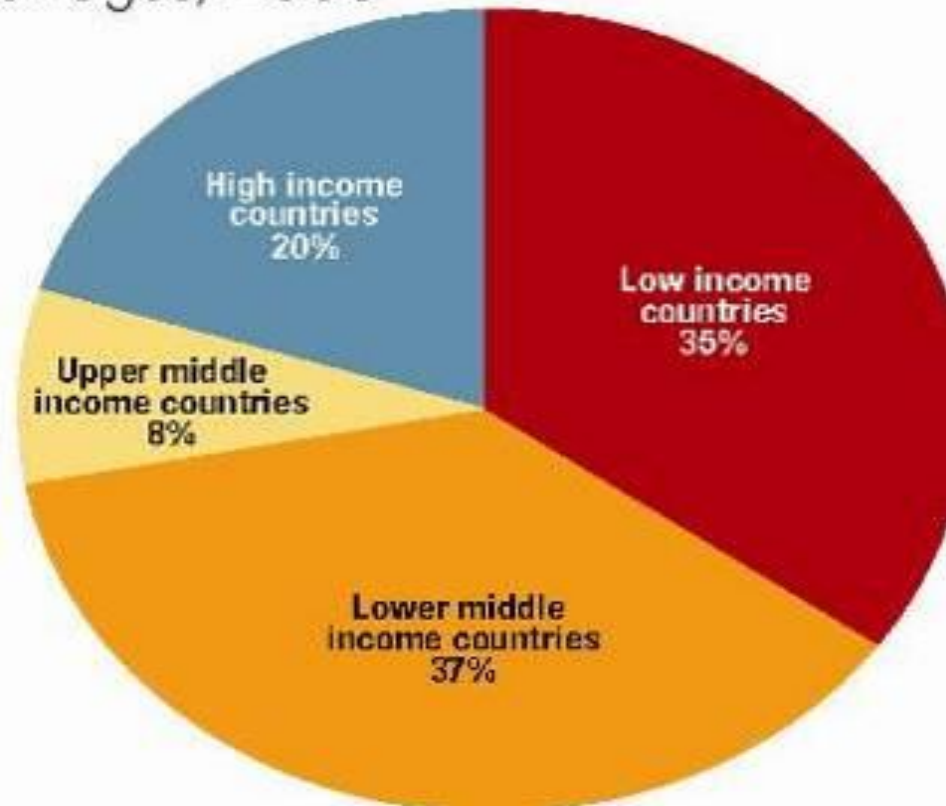


# 80% of chronic disease deaths occur in low & middle income countries



## Projected global distribution of chronic disease deaths

by World Bank income group, all ages, 2005



Reality: chronic diseases are concentrated among the poor



MISUNDERSTANDING

CHRONIC DISEASES  
MAINLY AFFECT  
RICH PEOPLE



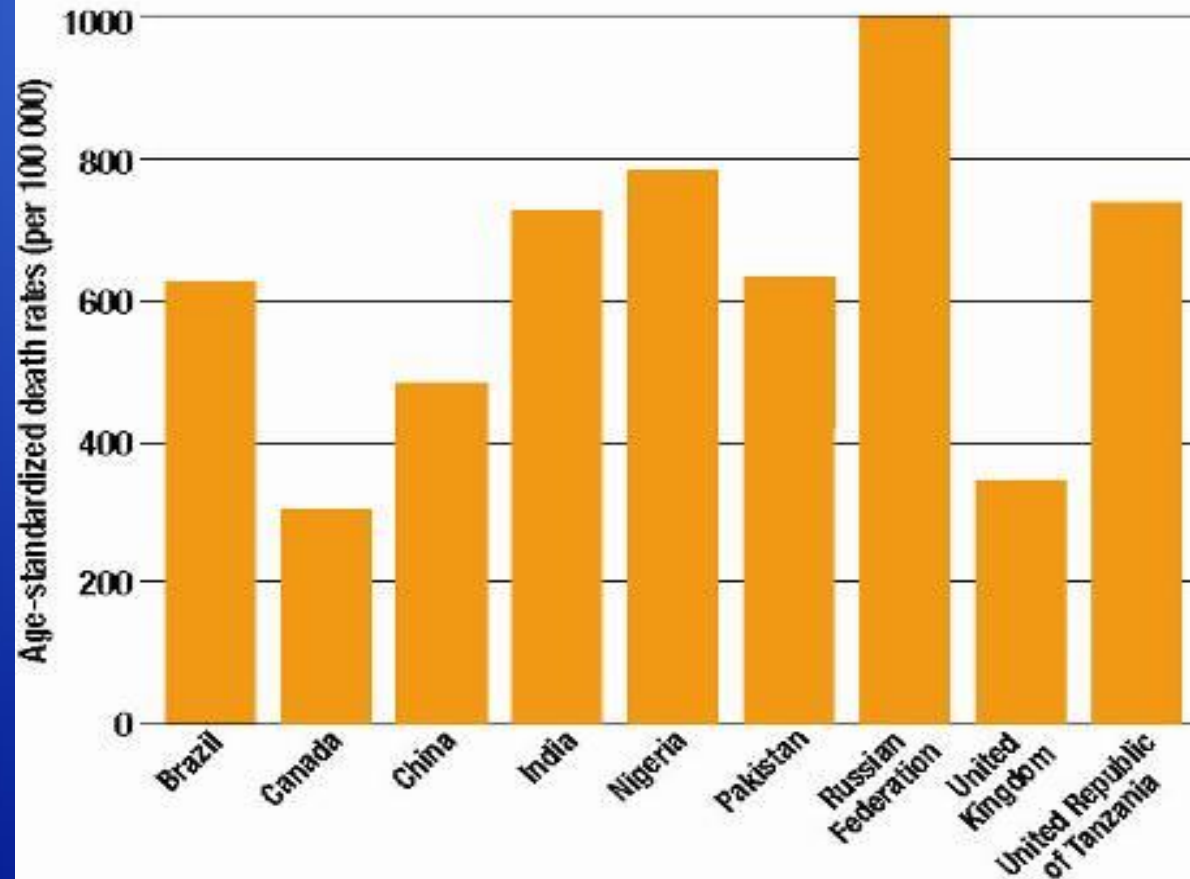
Reality: almost half in people under  
age 70 years



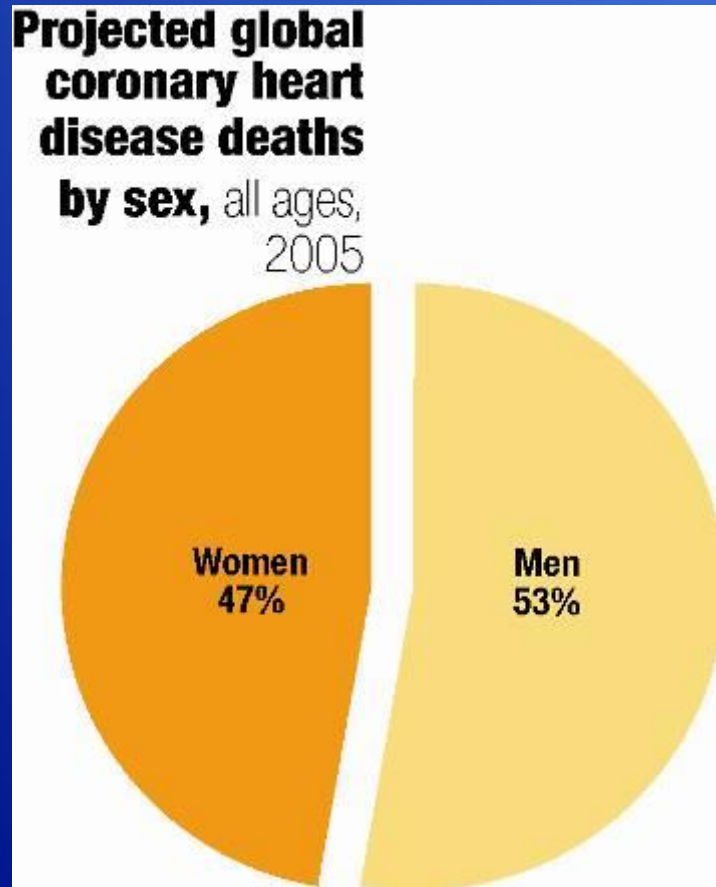
MISUNDERSTANDING

CHRONIC DISEASES MAINLY  
AFFECT OLD PEOPLE

**Projected chronic disease death rates**  
for selected countries, aged 30–69 years, 2005



# Reality: chronic diseases affect men and women almost equally



**MISUNDERSTANDING**  
**CHRONIC DISEASES AFFECT PRIMARILY MEN**

Reality: 80% of premature heart disease, stroke and type 2 diabetes is preventable, 40% of cancer is preventable



**MISUNDERSTANDING**

**CHRONIC DISEASES  
CAN'T BE PREVENTED**

Reality: inexpensive and  
cost-effective interventions exist



**MISUNDERSTANDING**

**CHRONIC DISEASE  
PREVENTION AND CONTROL  
IS TOO EXPENSIVE**

# Examples



- Coronary Heart Diseases
- Hypertensive Heart Diseases
- Cancer
- Stroke
- Diabetes
- Chronic Obstructive diseases
- Peptic Ulcer
- Blindness
- Mental Retardation
- Schizophrenia
- Arthritis

# Risk factors



- Modifiable
  - Cigarette smoking
  - High Blood pressure
  - Elevated serum Cholesterol
  - Diabetes
  - Life style changes (dietary patterns, physical activity)
  - Stress factors
  - Alcohol abuse
- Non-Modifiable
  - Age
  - Sex
  - Family Hx
  - Genetic factors
  - Personality?
  - Race



# The objectives of Integrated Chronic Disease Prevention and Control Programme are



- To strengthen prevention and control of chronic non-communicable diseases by tackling the major risk factors, focusing on WHO's four priority non-communicable diseases - cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases, and underlying determinants of health
- To reduce premature mortality and morbidity, and
- To improve quality of life, with particular focus on developing countries

# Prevention



- Primary prevention
  - Population Strategy
  - High Risk strategy
- Secondary prevention
- Tertiary prevention

# Population strategy



- Dietary Changes
- Blood pressure control
- Physical activity (weight reduction) - specially children
- Behavioral change – reduction of stress and Smoking cessation
- Self care
- Health education

# High Risk approach



- Identify Risk: Identify high risk people and families eg those who smoke, and have high serum cholesterol
- Specific Advise: helping them to stop smoking and exercise and diet control ect

# Secondary Prevention



- Continuation of primary care
- Early case detection and treatment
  - eg: CHD
    - Cessation of smoking
    - Reduction of serum cholesterol level
- Compliance



# Application of the frame work

# What works



## The **stepwise** framework

# 1

### PLANNING STEP 1

Estimate population need and advocate for action

# 2

### PLANNING STEP 2

Formulate and adopt policy

# 3

### PLANNING STEP 3

Identify policy implementation steps

Policy implementation steps	Population-wide interventions		Interventions for individuals
	National level	Sub-national level	
Implementation step 1 <b>CORE</b>	Interventions that are feasible to implement with existing resources in the short term.		
Implementation step 2 <b>EXPANDED</b>	Interventions that are possible to implement with a realistically projected increase in, or reallocation of, resources in the medium term.		
Implementation step 3 <b>DESIRABLE</b>	Evidence-based interventions which are beyond the reach of existing resources.		

Comprehensive and integrated action is the means to prevent and control chronic diseases



# Chronic Heart Disease (CHD)



# Chronic Heart Disease (CHD)



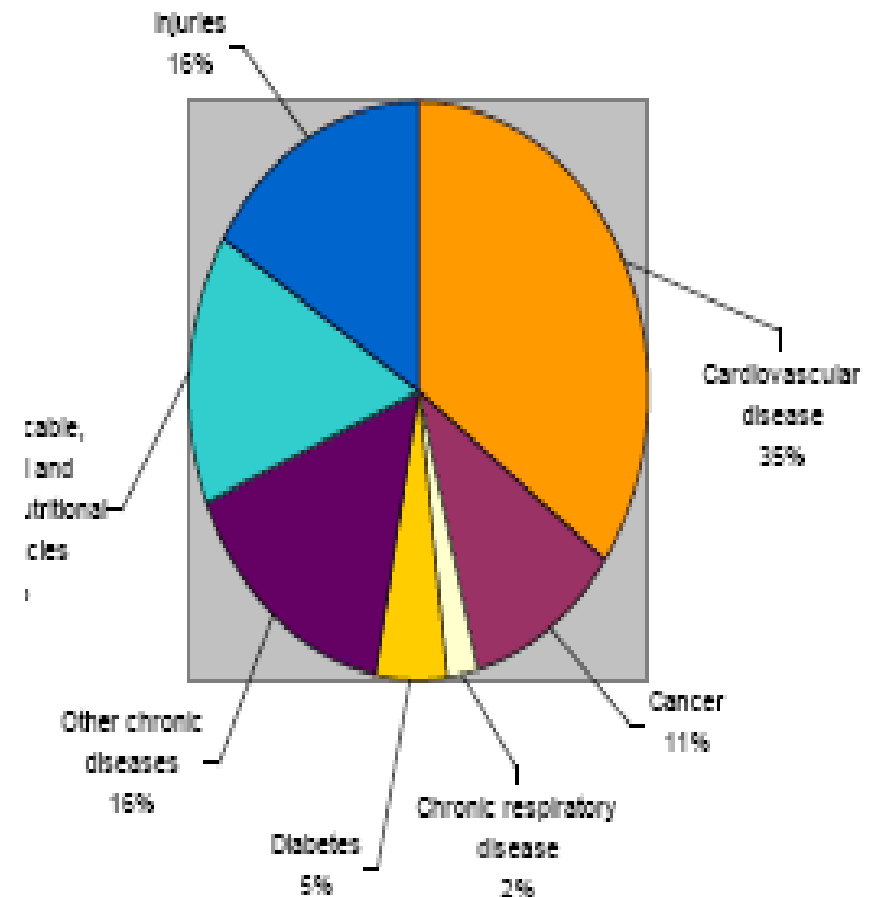
- Definition:
  - Impairment of heart function due to inadequate blood flow to the heart compared to its needs, caused by obstructive changes in the coronary circulation to the heart.
    - Angina on effort
    - Myocardial infraction (MI)
    - Irregularities of the heart
    - Cardiac failure
    - Sudden death

# Epidemiology of CHD in KSA



## Facts:

- In Saudi Arabia, chronic diseases accounted for 69% of all deaths in 2002 (see chart, right).
  - Total deaths in Saudi Arabia, 2002 = 97,000.
  - Total deaths related to chronic disease in Saudi Arabia, 2002 = 67,000.



# Risk factors?



- Smoking
- HTN
- Dyslipidemia
- DM
- Genetic predisposing?
- Physical inactivity
- Hormones?
- Type A personality
- Oral contraceptives-higher diastolic and systolic BP

# Prevention

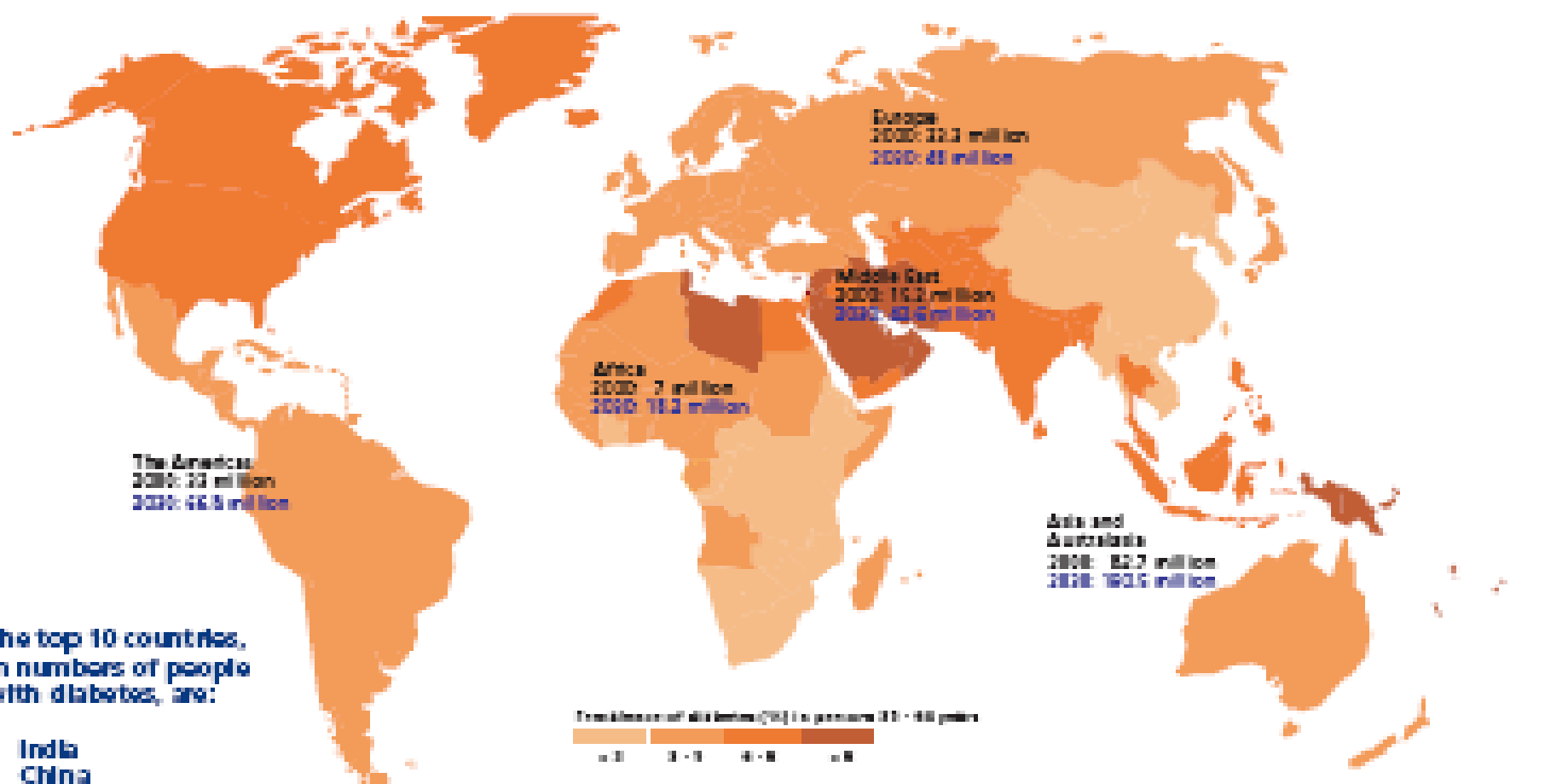


- Population strategy?
- High risk strategy?
- Individual strategy?



# Diabetes Mellitus

# Prevalence of diabetes



The top 10 countries, in numbers of people with diabetes, are:

- India
- China
- USA
- Indonesia
- Japan
- Pakistan
- Russia
- Brazil
- Italy
- Bangladesh

Prevalence of diabetes (%) in persons 20 - 84 years



2000 = number of people with diabetes in 2000  
2030 = number of people with diabetes in 2030

Source: WHO, 2008

Year	2000	2030
Ranking	Country	People with diabetes (millions)
1	India	31.7 / 79.4
2	China	20.8 / 42.3
3	United States of America	17.7 / 30.3

# Types of DM



- **Type 1 diabetes** : (previously known as insulin-dependent or childhood-onset) is characterized by a lack of insulin production. Without daily administration of insulin, Type 1 diabetes is rapidly fatal
- **Type 2 diabetes** (formerly called non-insulin-dependent or adult-onset) results from the body's ineffective use of insulin
- **Gestational diabetes** is hyperglycemia which is first recognized during pregnancy

# Risk factors?



- Familial tendency
- Obesity
- Diabetogenic drug
- Insanitary environment





**COMPLICATIONS?**

# Prevention



- Primary- **screening of high risk group**
  - Ideal body weight and nutrition
  - Exercise
- Secondary
  - Moderate blood glucose control and compliance
  - Foot care
  - Screening for retinopathy (which causes blindness);
  - Blood lipid control (to regulate cholesterol levels);
  - Screening for early signs of diabetes-related kidney disease
- Tertiary

# The global goal



- A 2% annual reduction in chronic disease death rates worldwide, per year, over the next 10 years.
- The scientific knowledge to achieve this goal already exists.

**36 000 000 lives can be saved**